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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,638	08/20/2001	Alekscy G. Kazantsev	01997-289001	6696

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EXAMINER	
DESAI, ANAND U	
ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/933,638	KAZANTSEV ET AL.	
	Examiner	Art Unit	
	Anand U. Desai, Ph.D.	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,18-27 and 30-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,18-27 and 30-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to Amendment filed on February 24, 2005. Claims 28, and 29 have been cancelled. New claims 45, and 46 have been added. Claims 1, 18-27, and 30-46 are currently pending and are under examination.

Withdrawal of Rejections

2. The rejection of claims 1, 18-20, 28-35, and 38 under 35 U.S.C. 102(b) as being anticipated by Peterson, et al. (Science 248: 1625-1630 (1990)) is withdrawn based on Applicants' amendment to the claims.

3. The rejection of claims 1, 18-22, 24-28, 34-36, and 38-44 under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (U.S. Patent 6,632,616 B2) in view of Huston et al. (U.S. Patent 5,525,491) is withdrawn based on Applicants' amendment to the claims.

4. The rejection of claims 1, 18-28, 34-36, and 38-44 under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (U.S. Patent 6,632,616 B2) in view of Huston et al. (U.S. Patent 5,525,491) and further in view of Housman et al. (U.S. Patent 6,420,122 B1) is withdrawn based on Applicants' amendment to the claims.

Maintenance of Rejections

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 30 is indefinite because it depends on a cancelled claim.

7. Claims 37 and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. In claims 37 and 46, it is not clear what proteins are encompassed by an amyloid-associated protein designation? If applicant submitted either a representative set of proteins known in the art and/or disclose specific amino acid sequences the phrase amyloid-associated protein would become clearer.

9. Claims 31-33 are rejected for depending on rejected claim 30.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 18-22, 24-26, 34-36, and 38-44 rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (U.S. Patent 6,632,616 B2) in view of Ladner et al. (U.S. Patent 4,946,778).

Burke et al. discloses polypeptide compounds that selectively bind to expanded polyglutamine repeats (see U.S. Patent '616, column 2, lines 15-25). The peptides can be used to slow or prevent disease pathology (see U.S. Patent '616, column 2, lines 7-10). The peptide compound is represented by the formula X^1-R^{11}-R^{12}-R^{13}-R^{14}-Y^1,

> wherein:
> R^{11} is Trp;
> R^{12} is (i) Trp or (ii) a charged amino acid such as Lys, Arg or His (preferably Lys or Arg, and most preferably Lys);
> R^{13} is (i) Trp or (ii) a charged amino acid such as Lys, Arg or His (preferably Lys or Arg, and most preferably Lys);
> subject to the proviso that one of R^{12} and R^{13} is Trp and the other is a charged amino acid;
> R^{14} is Trp;
> X^1 is a polypeptide consisting of from zero to 5, 10 or 20 or 30 amino acids, preferably standard amino acids; and
> Y^1 is a polypeptide consisting of from zero to 5, 10 or 20 or 30 amino acids, preferably standard amino acids;
> or a physiologically or pharmaceutically acceptable salt thereof. Compositions comprising compounds as described above in a pharmaceutically acceptable carrier, and the use of such compounds for the preparation of a medicament for the treatment of disorders as described herein, are also aspects of the present invention.

(see U.S. Patent '616, column 2, lines 26-48). Burke et al. also discloses a dimeric analog of the compound of the formula X^1-R^{11}-R^{12}-R^{13}-R^{14}-Y^1; The dimer is formed by utilizing an amino acid linker capable of binding to a free amine group of one peptide and a free carboxyl group of the other peptide (see U.S. Patent '616, column 10, lines 36-49). Burke et al. does not explicitly disclose a third domain that

separates the first domain from the second domain that consists of a polypeptide comprising an alpha-helical region or a beta-sheet secondary structure.

Ladner et al. discloses a peptide linker comprising the Hemoglobin helix sequence, Leu-Ser-Pro-Ala-Asp-Lys-Thr-Asn-Val-Lys-Ala-Ala-Trp-Gly-Lys-Val, which is used to design fusion proteins that retain biological activity (i.e. the fusion protein of the heavy and light chains of the variable region of an antibody still bind an antigen when linked with the Hemoglobin sequence) (see U.S. Patent '778, beginning on col. 36, Examples 4, and 7). The peptide linker disclosed by Ladner et al. forms an alpha-helical secondary structure (see U.S. Patent '778, lines 66-68). The peptide linker can be used to fuse one biologically active polypeptide to another biologically active peptide thereby forming a bi-functional fusion protein expressing both biological activities.

One would have been motivated to produce a therapeutic agent comprising the polypeptide compounds that selectively bind to expanded polyglutamine repeats to slow or prevent disease pathology. Burke et al. also suggests a dimeric analog of the compound, which is formed by utilizing an amino acid linker capable of binding to a free amine group of one peptide and a free carboxyl group of the other peptide, thus one of ordinary skill in the art would have been motivated to use the peptide linker domain disclosed by Ladner et al. to dimerize the compound disclosed by Burke et al. Furthermore, one would have expected the dimerized polyglutamine binding protein to retain biologically activity, since Burke et al. have shown a reduction in aggregation upon the administration of a dimerized compound (see U.S. Patent '616, Figures 4, and 5, the $(QBPI)_2$ compound, Table 1, column 21, and column 24, lines 24-28). Therefore, it would have been obvious to a person having ordinary skill in the art to synthesis a

therapeutic agent that selectively binds polyglutamine containing peptides to slow or prevent disease pathology (current application, claims 1, 18-22, 24-26, 34-36, and 38-44).

13. Claims 1, 18-27, 34-36, and 38-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. (U.S. Patent 6,632,616 B2) in view of Ladner et al. (U.S. Patent 4,946,778) as applied to claims 1, 18-22, 24-26, 34-36, and 38-44 above, and further in view of Housman et al. (U.S. Patent 6,420,122 B1). Housman et al. discloses a polypeptide with extended polyglutamine regions. The polypeptide contains the first 17 amino acids of the Huntingtin protein fused to 25 glutamine residues and fused with either a 28 amino acid c-myc tag or a 230 amino acid enhanced fluorescent protein tag (see U.S. Patent '122, column 12, lines 64 through column 13, line 10).

One would have been motivated to produce a therapeutic agent comprising the polypeptide compounds that selectively bind to expanded polyglutamine repeats to slow or prevent disease pathology. One would have expected the dimerized polyglutamine binding protein to retain biologically activity, since Housman et al. have shown maintenance of biological activity of a heterologous compound (polyglutamine interaction of recombinant protein fused to a label) (see U.S. Patent '122, Examples 3-6). Therefore, it would have been obvious to a person having ordinary skill in the art to synthesis a therapeutic agent comprising the first 17 amino acid residues of the Huntingtin protein fused to 25 consecutive glutamine residues that selectively binds polyglutamine containing peptides to slow or prevent disease pathology (current application, claims 1, 18-27, 34-36, and 38-46).

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand U. Desai, Ph.D. whose telephone number is (571) 272-0947. The examiner can normally be reached on Monday - Friday 7:00 a.m. - 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber can be reached on (517) 272-0925.. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 25, 2005

JON WEBER
SUPERVISORY PATENT EXAMINER